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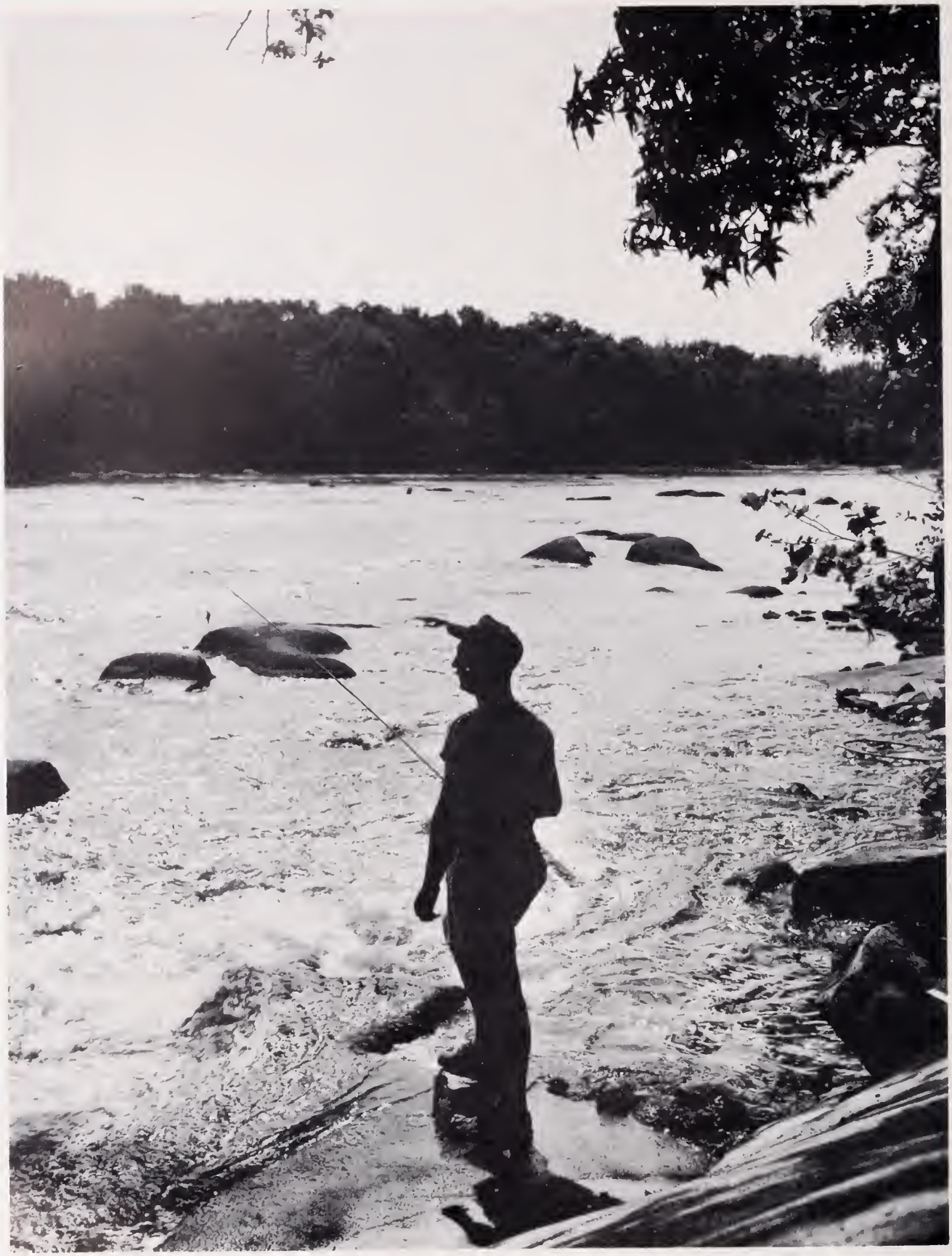

THE JAMES above Richmond

SMALLMOUTH WATER

VIRGINIA WILDLIFE

Published by VIRGINIA COMMISSION OF GAME AND INLAND FISHERIES, Richmond 13, Virginia

A Monthly Magazine Dedicated to the Conservation, Restoration, and Wise Use of Virginia's Wildlife and Related Natural Resources, and to the Betterment of Hunting and Fishing in Virginia

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Cover

The redbreast sunfish (Lepomis auritus) is the most colorful member of the sunfish family. This little gamester is quite a scrapper if taken on light tackle. Artist Duane Raver's four-color painting captures the bright characteristics of this fine panfish.

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QUALITY IN RECREATION

ARE we losing out in the quality of our recreation? As Americans are we giving sufficient thought to the distinctive nature of our recreation or are we merely putting the emphasis on the amount of it? What are we seeking anyway and what are we after?

July is a good time to ponder these questions because it is the first great vacation month of the summer and the recreational stampede starts with gusto in four directions.

The tourist who gasses up on Friday evening for a quick, all-night get-away to Timbuctoo, misses much of what he's after by not taking advantage of a better start. Likewise the angler, who rises before dawn and fails to allow himself enough motor time to get to Uplift Pond surely misses much of the beauty that is so characteristic of a quiet morn. And how about the round-the-circuit traveler? Distance means nothing to him. Take three weeks and I can tour all the western national parks in one quick circuit, he says, and we'll throw in half a dozen national monuments and a dozen national forests to boot.

Not so long ago I talked with a widely travelled lady in a northern city who had just returned from a 59-day, around-the-world cruise by air. "Could have done it in 49 days," she said, "if we had only avoided the delay in Tokyo and Hong Kong." Around the world in less time than it took John Smith to explore the lower reaches of Virginia's Chickahominy River. It makes one wonder. Where is the substance of such recreation? Could it be that our meaning of recreation is colored by so much fanfare and glitter and pace that we are losing our understanding of the true meaning of recreation?

The dictionary says that recreation has to do with recreating the mind and body, or more properly, the refreshment of the strength and spirit after toil. It says nothing about quality, but if we accept the meaning of recreation for what it is, then surely quality must enter the picture. Consider, for example, the tonic of wildness. How rare it is today and how high in value it is when we find it. The refreshment we find beside a gurgling brook deep in some hidden mountain glen is not the same feeling we get when seeing a similar stream in eroded country with cluttered beer cans and scattered picnic litter all around. The quality of the refreshment we get is different. In the former we have it in salubrious measure; in the latter we have it very much diluted.

This dilution of so much of our recreational values is what bothers so many of our conservationists today. We can't have our cake and eat it too. The pace-setting motorist who pays a fee to his scenery, as one philosopher put it, misses it altogether. The same applies to hunting and fishing. You can artificialize a sport to the extreme for when that happens the law of diminishing returns comes into play. Too much stepping up of yields, too much artificial intensive management of fish or game or any forms of recreation surely lower the unit value of what is received by making it common. Consider, for example, the quality of the recreation in shooting ring-necked pheasants. One hunter takes the normal course of hunting down wild ring-necks in a corn and wheat stubble field with good dogs on the loose, while another buys his recreation by a fee and does the same thing, bagging down pheasants on a shooting preserve where hand-reared birds are released before the gun.

Recreation then is not the resource itself but how we react to it--how it affects us. It is the quality of the refreshment of body and spirit that a resource gives us that is important. If we want more and better recreation we must somehow learn to appreciate natural values more. We must sharpen our perception to observe and feel. A man need not make a quick trip to the Redwoods to be awed by the majestic beauty of nature. The same thing--without harm to the mind and body and the resource--can be obtained by perceiving the awe of natural processes in your own back yard. Or, as the exceedingly perceptive philosopher Aldo Leopold put it: "The only true development in American recreational resources is the development of the perceptive faculty in Americans." —J. J. S.

"The grass is rich and matted, you cannot see the soil. It holds the rain and the mist, and they seep into the ground, feeding the streams in every kloof. It is well tended, and not too many cattle feed upon it; not too many fires burn it, laying bare the soil. Stand unshod upon it, for the ground is holy, being even as it came from the Creator. Keep it, guard it, care for it, for it keeps men, guards men, cares for men. Destroy it and man is destroyed."

—Alan Paton in CRY THE BELOVED COUNTRY

Photo Army Engineers

The vast lake behind the John H. Kerr Dam is a natural recreational asset. Nearly two million persons visit the lake each year.

BUGGS ISLAND LAKE

Virginia-North Carolina's Vast New Mecca for Recreation Seekers

By MAX C. WEEKS
Reservoir Manager
in collaboration with Virginia Game Commission

SOUTHSIDE Virginia's new engineer impoundment, Buggs Island Reservoir behind Kerr Dam, is one of the newest TVA-type of giant lakes to be added to the federal government's chain of lakes in southeastern United States. Overnight, with a single magical stroke of the engineer's wand, a huge impoundment exceeding 50,000 acres of fresh water was created for the recreationists - almost doubling the total amount of previously impounded water in Virginia.

The John H. Kerr Dam and Reservoir is a 117,300-acre multiple purpose project of the U. S. Army Corps of Engineers with flood control and the production of hydroelectric power the principal objectives. The vast lake behind the dam, known to Virginians as Buggs Island Lake, is a natural recreational asset as a result of the impoundment and while classed as an incidental benefit, is a value of no mean proportions. A total of 1,667,000 persons visited the lake in the year 1954. The interest in fishing and hunting continued at a high rate.

The lake has a fishable shoreline of 800 miles and a recreational area of staggering proportions. At lake elevation 300 feet (summer) the water acreage stands at some 50,000 surface acres. At elevation 320 feet (flood stage) the surface acreage of the lake is increased to 83,000 acres. Roughly three quarters or 76 per cent of the lake is in Virginia and the remainder in North Carolina.

Pursuant to requests from respective state agencies, Virginia was granted approximately 765 acres and North Carolina 241 acres for the development and management of wildlife refuge areas. This is government land purchased for flood storage and leased to the states without cost. In addition to the refuge areas, 46 upland game plots were seeded in 1954 with lespedeza, milo, bicolor, and other feed crops by the state agencies, making a total of 122 feed plots which have been created in the past two years. Also, there were 67 acres of waterfowl pastures established in 1954 in cooperation with the two states. The total annual day use for 1954 for ducks and geese using the reservoir was 1,350,000.

FISHING

A Virginia and North Carolina joint reciprocal agreement on fishing recognizes state resident and non-resident fishing licenses of either state in all reservoir waters downstream from the state highway bridge at Clarksville, Virginia.

In Virginia the regulations stipulate that:

"State resident fishing licenses and State non-resident fishing licenses and the 3 consecutive day special non-resident fishing licenses legally obtained from the Virginia Commission of Game and Inland Fisheries or State resident fishing permits and the non-resident fishing permits legally obtained from the North Carolina Wildlife Resources Commission, or the duly authorized re-

Boat launching facilities at Buggs Island Lake are more than ample. There are also a number of docking places.

The lake has a fishable shoreline of 800 miles. When full, the surface area covers 83,000 acres.

Camping and picnicking is permitted in certain restricted areas and at concession points.

Water sports are increasing in popularity. There is plenty of water area for the safe handling of wind-propelled craft.

Commission Photos by Kesteloo

presentatives of either, shall be honored and accepted as legal authority to fish only by means of rod and reel, or hook and line, or by casting, in the areas included within that portion of John H. Kerr Reservoir described in the following paragraph. Other fishing licenses, permits or privileges of either State will not be reciprocally honored.

"Fishing in Kerr Reservoir - It shall be lawful to angle for any species of fish throughout the year in the waters of the John H. Kerr Reservoir, otherwise known as Buggs Island Reservoir, lying east of U. S. route 15 highway bridge near Clarksville, Virginia, to the reservoir dam, including all tributary waters lying in Virginia which are accessible by boat from the main body of the reservoir, or from sub-impoundments lying east of the said highway bridge, however, the game fish daily creel and size limits shall apply in the above named area as follows: jack (chain pickerel) 12, no size limit; walleye (pike-perch) 5, not less than 15 inches; black bass (consisting of Kentucky or spotted, smallmouth and largemouth) 8 in the aggregate, not less than 10 inches; white bass 8, not less than 10 inches; striped bass 15, not less than 12 inches; rock bass (redeye) 10, no size limit; pan fish, consisting of crappies, yellow perch, white perch, warmouth or open-mouth, redbreast or robin, bluegill or bream, and all other species of sunfish perch, or pickerel not specifically listed above, in the aggregate 25, no size limit."

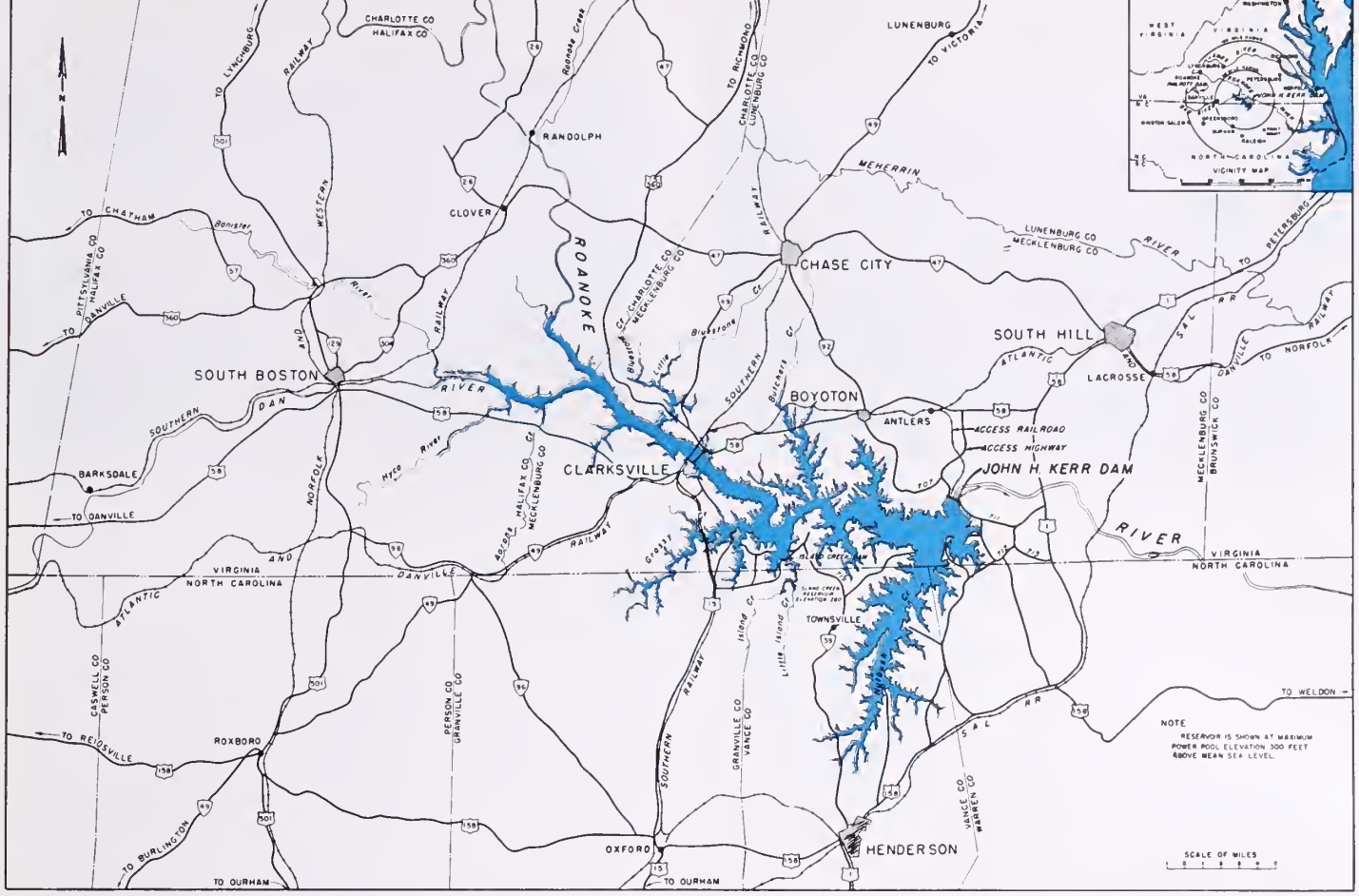
The non-resident interstate (North Carolina and Virginia) license to fish 3 consecutive days is $1.00.

The principal species of game fish found in the lake are the largemouth black bass, black crappie, and sunfish (several species). Of lesser importance but still very much in the limelight with fishermen, are the chain pickerel, walleye, channel catfish, and carp.

In spite of an unusually hot summer, which is not conducive to good fishing, the total annual day use by fishermen in 1954 was 333,800, with a total catch of 550,000 pounds of game fish. At present there are ten boat docks for recreationists and each has a concession stand. Most of these are open from March to November, although a few such as the Satterwhite Point Marina in North Carolina and Occoneechee Harbor at Clarksville are open all year. There are 125 boat landing places on the lake (mostly road cut-offs leading to the lake) and some 150 angler and recreationist access points.

A schedule of prices covering products and services offered by the public concession stands is included under miscellaneous information and may be subject to some minor changes from year to year. The thing to remember is that most fisherman needs are available at the lake docks and at reasonable prices approved by the Corps of Engineers.

As to best places to fish, this is anybody's guess. Popular spots are many and one has only to inquire at the local docks as to where best spots are said to be.



BOATING AND SWIMMING

Boating and swimming facilities at Buggs Island Lake are more than ample. There are several very good "marinas" with both docking and launching facilities and swimming is to be had at several natural beaches. Additional areas are also under development, or will be, both in North Carolina and Virginia. The Staunton River State Park is located on one portion of the lake and has several recreational areas under development.

CAMPING AND PICNICKING

Camping and picnicking is permitted in certain restricted areas around Buggs Island Lake and at concession points. No permits are required for camping unless the stay is expected to be over two weeks. Trailer parking is permitted at concession points with the permission of the concessionaire.

All established picnic and camp grounds have neat picnic tables, fireplace areas, and nearby water and toilets. Virginia state laws apply to building fires and in North Carolina, fires are permitted any time as long as they are at established campsites.

HUNTING

With an 800-mile shoreline, Buggs Island Lake offers fair waterfowling during the winter months when the season on ducks and geese is in. Two types of shooting are practiced, jumping shooting around points, coves and creeks, and floating blind shooting. Guide service is available and blinds may be rented by the day. Only floating blinds are permitted by permit issued by the reservoir manager. Most common ducks using the area are blacks, mallards, teal, and pintails. The great bulk of the federal land adjoining the lake is open to public hunting, including upland game such as quail, rabbits, and squirrels.

The reservoir accommodated 83,000 hunters during 1954 and licenses were issued for 163 duck blinds. Cooperative planning of upland game food plots and waterfowl pasture areas was accomplished in coordination with the Virginia Commission of Game and Inland Fisheries and the North Carolina Wildlife Resources Commission. Leases were executed with both states for the establishment of wildlife refuge areas. Hunters on the John H. Kerr Reservoir in 1954 harvested 51 deer, 3,500 squirrels, 7,600 rabbits, 60 turkeys, 7,000 quail, and 1,400 ducks and geese. One in four-man-days hunting got one bird or animal.

WILDLIFE DEVELOPMENT

The Virginia Commission of Game and Inland Fisheries in cooperation with the U. S. Corps of Engineers and the North Carolina Wildlife Resources Commission has a number of waterfowl areas around Buggs Island Lake under development. Food and cover plantings are maintained on a number of waterfowl refuges and several other suitable sites are slated for habitat development for marsh wildlife. The Virginia Game Commission also has numerous food patches on the government-owned lands which help maintain a supply of upland game.

Quiet coves make ideal mooring places for all sizes of craft. The fee is reasonable depending on size of boat and the service rendered.

Waterfowl, deer, squirrels, rabbits, turkey and quail are typical game bagged by hunters using the federally-owned waters and land.

Reservoir management personnel cooperated with representatives of the two state wildlife agencies and the U. S. Fish and Wildlife Service in meeting with nearly 1500 persons composing interested civic and professional groups for educational programs in relation to wildlife protection. Maps, sunrise and sunset time schedules, and rules and regulations were disseminated.

Island Creek Dam is a small dam on the south side of Buggs Island Lake. The dam was built to prevent the lake from flooding the valuable tungsten mining areas. There are three large electric pumps which pump the flow of the Island Creek over the dam and into Kerr Reservoir, making possible close control of the level of the lake. The Fish and Wildlife Service has taken a great interest in this little Lake which before the dam was built was nothing more than an intermittent stream which supported no fish or wildlife.

Mr. T. Stuart Critcher, Federal Aid Coordinator, Game Division, Wildlife Resources Committee of the State of North Carolina, has given various recommendations with regard to the control of the water level in the lake. The level during the 1954 spring and summer growing season was lowered so that a large amount of vegetation would grow along the shores. Then in the fall and winter when the ducks were in, the level was raised so that the vegetation was under water.

In a letter written to the Corps of Engineers Mr. Critcher states: "On March 11, 1954, it was noted that an abundance of waterfowl foods had matured on the flats which lie adjacent to the channel of Island Creek and approximately four hundred mallards and black ducks were observed on the area." The following year on March 11, 1955, Mr. Critcher continues, he and two Commission biologists observed approximately 1,250 ducks within the feeding area, a substantial increase over the number present the year before. Those seen were primarily mallards, black ducks, pintails, ring-necked ducks, scaups, and canvas-backs. Mr. Critcher points out that the management techniques employed during the past year achieved successful results.

MISCELLANEOUS INFORMATION

Buggs Island Lake was constructed primarily to protect the lower Roanoke River Basin from periodic floods. Already a number of serious floods on the Roanoke River have been prevented as a result of the new Kerr Dam, the latest being in the spring of 1955.

The reservoir dam was constructed on the Roanoke River about 12 miles southwest of South Hill, Virginia, or 20 miles downstream from Clarksville. The lake backs water for 54 miles, serving an immediate population of some 700,000 people, with two-thirds of this number living in Virginia. Some three million people reside within 100 miles of the reservoir.

Buggs Island Lake, aside from the opportunities it provides for fishing, hunting and water sports, also provides ample locations for camps, cottages, permanent homes, and playgrounds.

The established schedule of prices covering services and products offered by public concessions is as follows:

Product of Service	Rates		
	Daily Rate*	½Day Rate**	Hourly Rate
Boat 14′	$2.00	$1.50	$0.50
Boat 16′	3.00	2.00	.75
Outboard motors ***			
Up to 5½ H.P.	4.00	2.50	1.00
5½ H.P. through 10 H.P.	5.00	3.00	2.00
Over 10 H. P.	6.00	3:50	3.00
Guide service day	$10.00 per person		
Duck blinds	20.00 per day including decoys and transportation		
Fishing poles	25¢ per day rental		
Gas & oil mixed	50¢ per gallon		
Gasoline	35¢ per gallon		
Oil	Established retail prices		
Soft drinks	10¢ each		
Packaged foods	Established retail prices		
Boat mooring	$3.00 to $20.00 per month depending on size and service		
Minnows	50¢ to 75¢ per dozen		
Worms	50¢ to $1.25 per hundred		
Water skis	75¢ per hour		
Surf boards	$1.00 per hour		
Boats, motors, accessories and souvenirs	Established retail prices		
Labor for repairs	$2.50 per hour		
Cruise rides	Up to $50.00 per day with licensed pilot		

All other products will be sold at price levels which will not exceed manufacturer's suggested retail prices.

*Day established as from sunrise to sunset.

**½Day established at 6 hours continuous use.

***Rental of all motors includes two gallons of gasoline and required number of paddles, life preservers, and anchor.

One Hundred and Fifty-Five Drowned in Virginia Last Year--

Let's Swim Safely This Summer

By DOROTHY TROUBETZKOY

Red Cross Photos by Marjorie Parsons

OF course *you* won't be foolish enough to go swimming alone or right after eating, in a strange quarry or on an unguarded beach this summer. But someone else may when you're around and, even if you can't swim at all, you may be able to save a life if you keep your head and remember a few simple suggestions.

Often an unspectacular shore or wading assist and the length of a shirt sleeve can be the measure between life and death. A conscious victim will usually grab anything thrust in his direction. That is why it is so important to stay out of his reach, but you can use this reaction to advantage by holding out a towel, a fish pole, a paddle--anything that will increase your reach without endangering both of you. You can do this from the deck of a pool, from a dock or by wading out into the water as far as you safely can.

Of course it is much better and safer all around if you learn to swim, whether in "Learn to Swim" classes conducted by the Red Cross, at the "Y," at a camp or club. This will increase your own safety. But even after you become an excellent swimmer, you should be careful not to attempt rescues for which you need specific training.

Just because you know how to swim, don't jump in blindly after a victim. Whenever possible, try the shore and wading assists. If a victim is some distance from shore and you have available a boat which you know how to handle, by all means use that instead of trying to swim. When you get nearby, slow down, let the victim grasp the oar and be drawn to the boat.

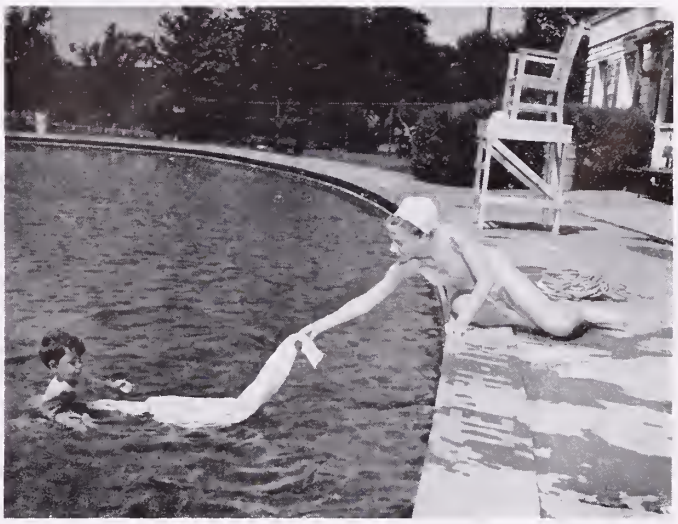
In emergency, there are a number of elementary "shirt-tail lifesaving" techniques which a swimmer can use although he has had no formal training in lifesaving skills. There are various simple carries, such as the collar tow, the wrist tow, the hair carry and the extension tow, (using a branch or sweatshirt, etc.) Be sure to keep your towing arm straight. It will keep your victim out of reach and make your swimming job easier. The wrist tow is good to help a person through the surf that would otherwise break full on his face.

What would you do if you got a cramp in your leg while swimming, became tangled in water weeds or carried out from shore by a swift strong current? To release muscle cramp, take a deep breath, roll face down in the water, press firmly with both hands on the cramped area or, if it was caused by cold, knead it vigorously. Stomach cramp victims, however, are helpless — a very good reason for not swimming alone or too soon after dinner.

If you get tangled in some sort of water weed, thrashing about will only imprison you more tightly. Instead, clear your arms and legs by slow and gentle shaking movements.

Never try to fight a current. Always swim diagonally across and with its flow; even though it may take you

Your child will be a lot safer when he goes in or near the water if he has learned to swim. The Red Cross, the Y.M.C.A. and the Y.W.C.A. conduct such "learn to swim" classes at many places in Virginia.



It looks easy and it is. Extend a towel or anything else suitable and handy, like a fish pole or a paddle, to anyone having trouble in the water near shore. Just have presence of mind enough to give this sort of help when it's needed.

If you know how to swim, but are not a trained lifesaver, the hair carry or collar tow are lifesaving techniques you can resort to. Approach the victim from the rear and keep your towing arm straight so he can't get a grip on you and to make it an easier pull.

If you make it a rule never to swim except on an organized waterfront protected by vigilant trained lifeguards and to follow the regulations set up for local conditions, you will enjoy a maximum of fun and safety. If in trouble, you will get prompt and skilled assistance from a lifesaver.

some distance from where you want to be, that will be a lot better than not getting ashore at all. An undertow is a deep, short current. When caught in one, turn, go with it and take a diagonal course to the surface.

If your boat or canoe capsizes, the general rule is to stay with it. You can kick an overturned canoe to safety. Nearly any small craft will float even when it is full of water, so if you can manage to right your boat, you can get back in and hand paddle it to shore.

Naturally, it is most desirable to have as many people as possible trained in junior (12-15 years) and senior (16 and over) lifesaving. Not only are they potential rescuers of those who get into trouble in the water, but they have learned far more respect for the water themselves. Seldom will you see a trained lifesaver showing off foolishly at ocean or lake. He has too much confidence to need that proof and he understands too well that even the most skilled and powerful swimmers have their limitations.

Get in touch with your local chapter of the American Red Cross, with the Y. W. C. A. or the Y. M. C. A. and find out what programs are offered which best suit your needs.

Wherever facilities, community cooperation and needs make it possible, courses in a great range of water skills are offered, for beginners, intermediates and advanced swimmers, for life savers and water safety instructors. For the first time this year, Virginia held a certified Waterfront Training Institute at Camp Shawondassee under the direction of William J. Phillips, head of the Water Safety Services for the Richmond Chapter of the Red Cross. This three-day school offered basic courses in boating, canoeing and waterfront administration.

As swimming and boating areas in Virginia are enlarged and become ever more popular — whether on ocean or bay beaches along the rivers, creeks and sounds, or in impoundments like Kerr Reservoir and the many public fishing ponds constructed by the Commission of Game and Inland Fisheries — the need for more general water safety practices becomes more urgent.

There were 6,700 drownings in the United States in 1953—the most recent national statistics available. There were 155 drownings in Virginia in 1954. Five of those were in the city of Richmond. By far the largest number, as would be expected, occurred during the months of May, June, July and August, with June the peak month. Many early season drownings result from a combination of low water temperatures and lack of physical conditioning.

The age group hardest hit was that between 15 and 24, both in state and nationally. In Virginia, 5-14 and 25-34 were the next most dangerous ages. Of the 6,700 drownings in the country as a whole, 3400 were the direct result of swimming or playing in the water. Of the balance, many were the result of falling in the water, boating and other transport accidents.

The total is depressing, especially when accident descriptions indicate that many were preventable or that trained persons might easily have effected rescues. There is another more encouraging set of statistics. In the period 1903-7, there was an average of 9200 drownings a year, a rate of 11 per 100,000 population. Not only has that yearly average dropped consistently as the result of water safety education, but the rate per 100,000 is down to 4.2. If only we can stimulate in Virginia the widespread general public interest and cooperation in educational programs which have so drastically cut the rate of drownings elsewhere, we will not only cut down on water tragedies, but increase vacation pleasures—for only safe swimming is fun.

This year's Memorial Day weekend alone ran up a tragic record of 125 holiday drownings in the United States, with five of them in Virginia.

Fish Conservation Fundamentals

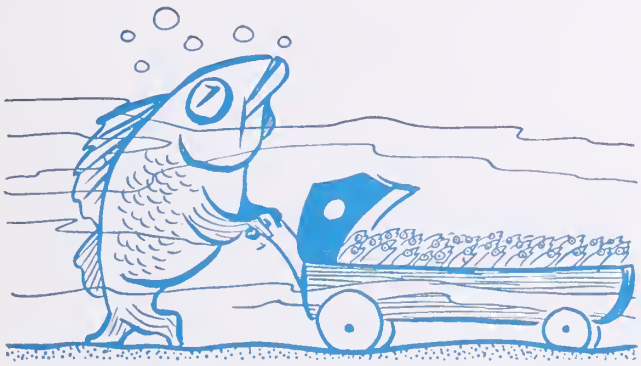
By R. W. ESCHMEYER
Vice President, Sport Fishing Institute

Stocking (The second in a series of articles)

THERE'S one basic fact that needs to be understood if we are to properly determine the role of stocking. Fish are prolific - much more prolific than most animals we deal with.

We can't give accurate figures on egg production because a big female lays far more eggs than a small female of the same species. However, in general, a trout may lay 1,000 eggs, a bass 10,000, a bluegill 20,000, a walleye 50,000, and a big carp might lay a million. Under suitable conditions, a big percentage of these eggs hatch. One study on a 14-acre lake showed that the number of fry produced naturally by four species (largemouth bass, bluegill, common sunfish, rock bass) was slightly over 500,000 per acre. The water would support only a few hundred adult fish per acre.

We have had instances where the limited brood stock present in the original river was more than adequate to provide all the fish needed to stock big impoundments.



A big female bass in a one-acre farm pond could produce enough progeny so that, if all eggs hatched and all fish survived for three generations, there would be enough fish, at one pound each, to replace the water in the pond, and to make a heap, one acre in area, extending over 700 feet above the pond!

Obviously, fish are prolific. We can understand the picture if we will think of cows each having thousands of calves each year. If each cow had only 10,000 calves, adding a truck load of calves wouldn't increase the cattle population of a pasture very appreciably.

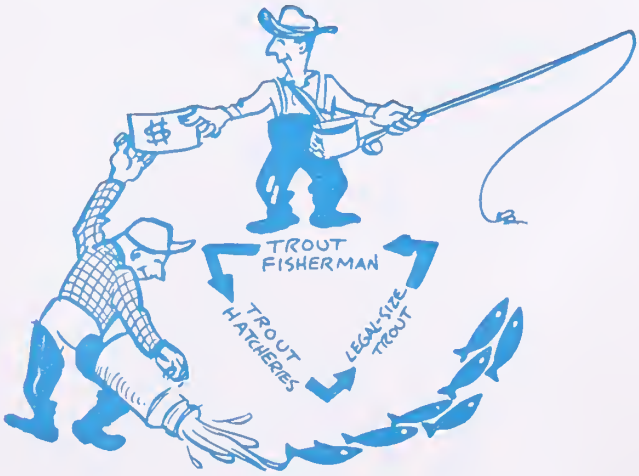
There's an added item. Fish need food - lots of it. Their food chains tend to be long. The average acre of water in the United States probably supports only about a hundred pounds per acre. This may range all the way from a very few pounds in some waters to a thousand pounds or more in some small highly productive waters.

It's easy to see why, during the days of the hatchery "craze," many of our hopes were unrealized. We can understand, now, why much of the stocking was ineffective or even harmful. During those days the public was quite willing to accept the belief that stocking was the panacea to all our fishing ills. We fishery workers believed it, too, and advocated it. The job of selling the stocking idea was an effective one. It was later that we learned more about fish being prolific and about the food needs.

The job of "unselling" has not been an easy one. For instance, a year or two ago we talked with a farmer about his farm pond. He had decided to start fishing it but then he observed an immense crop of bluegill fry - "millions of 'em." "We decided to wait until they grow up before starting the fishing," said the farmer. The man had a well-managed farm. He had only a limited number of cows in his pasture. He understood about carrying capacity and overgrazing on the land. But to him the farm pond was quite different.

There's the case, too, of sportsmen being delighted when a federal truck delivered bass fry for distribution in the rather extensive bass waters of one county. The supply consisted of 5,000 fry, less than half the potential output of one female!

Though there are still exceptions, more and more sportsmen recognize the fact that stocking has limitations. In general, the public still looks on stocking as a cure-all only in those states where the top fishery people (some ex-hatchery men or politicians) have been disinterested in public enlightenment, for obvious reasons.



Stocking does have major limitations. But, it's one of our important fish conservation tools. Properly used, stocking plays an important role in improving our fishing.

WARM WATER FISH

For warm waters we must rely on planting small fish. Raising game fish to adult size in hatcheries costs a fortune. Rearing a bass to twelve inches would cost an estimated two to four dollars. Not over half the planted fish can be expected to be recaught. This raises the average price of each bass creeled to four to eight dollars - more than the average price of a fishing license. So far as we know, only one state still carries on this expensive practice.

Planting warm water fingerlings serves a good purpose in a number of instances:

1. To stock new waters, especially farm ponds and new public fishing lakes.
2. Reintroduction of fish in lakes depleted by winterkill.
3. Introducing species not already present, where such introduction is desirable.
4. Restocking of waters from which existing fish populations were removed through use of chemicals or by draining.
5. In some instances stocking will help fishing in waters where the fish are already present, but where conditions for spawning are inadequate. For example, Minnesota has been able to provide walleye fishing in some kinds of waters by stocking them heavily with walleye fingerlings. The situations where stocking of this kind is helpful seem to be rather limited; the need for the stocking should be determined by the professional fishery worker.

COLD WATER FISH

The stocking picture for warm water fish and cold water fish differs rather decidedly. Trout can be raised to catchable size at a much lower cost than would be needed to raise bass or other game fish to a size where they would be attractive to anglers.

In numerous waters we can now have good trout fishing only by planting catchable-size fish. The cost is high. A single legal limit costs more than the price of a license. But, such stocking is justified if the trout fisherman is willing to pay the bill. In many trout waters, the question is one of having put-and-take stocking, or having no fishing at all. Of course, such stocking is justified only on heavily fished waters where a big percentage of the planted fish will be retaken by the angler.

In general, stocking with cold water species may be expected to benefit fishing under these circumstances:

1. Stocking lakes where conditions are suitable, but where the trout have no spawning areas. Usually fingerlings may be stocked under these conditions. Many trout lakes provide good fishing only because of periodic fingerling stocking; others have adequate natural reproduction.
2. Restocking lakes with fingerlings after removal of existing fish populations by use of rotenone or by draining. The state of Washington, for example, has provided excellent trout fishing in a number of waters by this method.
3. Stocking with catchable-size trout. This is the only method of providing good trout fishing in many very heavily fished waters, either because they are not good trout waters or because they cannot raise enough fish naturally to take care of the demand. For best results the fish must usually be planted at intervals just before and during the open season. Most studies show a low winter survival of these fish.
4. Stocking with anadromous fishes. Planting of small salmon is helpful where the spawning habitat has been destroyed by the building of dams or by other activity. Too, stocking with steelhead on the west coast has greatly improved the runs of these fish.

INTRODUCTIONS

Introductions have been both beneficial and harmful. For example, trout fishing has been created in many waters by introducing trout; fishing in some waters has been destroyed by introducing carp.

Often sportsmen tend to want those species introduced which are not already present. If these succeed, they must generally do so at the expense of native species. Carrying capacity is limited. If we add horse, sheep and mules to a pasture, the pasture will necessarily support fewer cows than it could support before the other species were added.

IN GENERAL

Stocking isn't a cure-all. For a while its value was greatly over emphasized. It's only one of the various fish management tools. However, it is still a very important tool. Its value will depend on how intelligently the tool is used. The need for stocking should be definitely established before we stock. It should be established not by the man who raises fish, or by the sportsmen, but by competent trained fishery personnel through a study of the habitat and the fish population already present.

The American Fisheries Society's committee on hydrobiology and fish culture gave a comprehensive report on advances in these two fields at a recent meeting of the Society in Seattle. Here is one of the many important observations given in the report:

Much improvement in the use of hatcheries and hatchery products is still urgently needed. All too frequently a hatchery program is operated as a distinct and separate function of a Fish and Game Agency rather than as a branch or tool of a Fisheries Management Division. Hatchery superintendents, sportsmen, forest rangers, and many others who have no knowledge of ecology or fish populations are given full charge of fish plantings. Fish released by such individuals frequently have less chance for survival than a palm tree in Chicago. Productive - and consequently successful - hatchery programs can be expected only where trained fishery biologists are handling planting programs and are judiciously using hatcheries as only one phase of a fisheries management program.

Noted Fisheries Scientist Passes

DR. R. William Eschmeyer, Executive Vice President of the Sport Fishing Institute, Washington, D. C., died unexpectedly of a heart attack at his home at 5005 North 27th Street, Arlington, Virginia, May 21. He had been watching the ball game on T.V.

In addition to being a tremendous personal loss to many, Dr. Eschmeyer's passing closed the door on a fruitful and significant chapter in the development of modern fish conservation.

"Doc" Eschmeyer's career was marked by a number of distinguished firsts in research and management in the fish conservation field. In addition to his outstanding professional accomplishments, he was widely known as an author of ten books for children on fish conservation subjects. The list includes "Billy Bass," "Tommy Trout," "Bobby Bluegill," and others.

"Doc's" interest in the education and development of youth found many channels of expression. He served on the national Boy Scout Conservation Committee and was instrumental in helping to organize the 1954 National Good Turn in Conservation which led to the adoption of conservation as a permanent part of scouting. He was constantly pointing out the value of fishing as a means to sound mental and physical health.

"Doc" was born in New Knoxville, Ohio, in 1905, and spent his boyhood in and around New Bremen, Ohio. He attended Heidelberg College, Tiffin, Ohio, where he received his Bachelor's degree in 1927. He did his graduate work in fisheries at the University of Michigan getting his Doctorate there in 1930.

He served as fishery biologist for the Institute of Fisheries Research, Michigan Conservation Department, for 8 years until 1938. It was while in Michigan that he scored the first of his many significant achievements in fish conservation. There, for the first time, Doc employed rotenone to poison out the entire fish populations so fishing could be improved by starting over.

He next went to the Tennessee Valley Authority at Norris, Tennessee, where he was in charge of fish work for 12 years, becoming the Assistant Chief of the Fish and Game Branch. It was here that he organized and directed the research which resulted in the abandonment of the closed season on game fish in the large TVA impoundments.

In 1950, the directors of the newly organized Sport Fishing Institute selected Dr. Eschmeyer as the outstanding fish conservationist in the country to develop and head up a program to help "shorten the time between bites." "Doc" then became even better known nationally and internationally for his efforts to improve sport fishing.

His FISH CONSERVATION FUNDAMENTALS are widely acclaimed as a readily understood digest of principles in this field. Numerous consumer and state fish and game and conservation magazines have reprinted the FUNDAMENTALS and continue to do so. His many other writings, through the medium of the BULLETIN, and special publications, are widely used.

He is survived by his wife, Ruth W. Eschmeyer; three children, Barbara 18, William 16, and Jane 12.

WATER THRUSH AT NATURAL BRIDGE

By DOROTHY COBLE DREESE

ABOVE the peaceful organ music resounding from the steep walls of the water-cut gorge came the sweet-shrill call of the Louisana water thrush.

Most of the crowd treading the foot path had unhearing ears as they hastened along to observe those phenomena or attractions listed in the guidebook - waterfalls, saltpeter mines or ancient cedars. I was thinking of the magnificence of nature, the changes effected by water erosion over millions of years, myself becoming more and more infinitesimal, until suddenly I was brought back to the consciousness of the moment by the insistent singing of the water thrush.

The bird was easy to find bob-bobbing on the stones in the cool, flowing stream a few feet below. There were two birds! The food in their mouths gave evidence that a nest of young was near. It was an anxious waiting!

Slowly and hesitatingly, singing and teetering, they began moving upward on the smooth rock wall, to the first ledge, to the next and to the next. When they were at least twenty feet above the water and about one hundred feet from the bridge itself, the birds in turn flew into a clump of tulip poplar shoots.

The first bird emerged, having exchanged the food for a dropping, and descended to a quiet eddy. Only after its bill was fully submerged did it release the excretion. The second bird did a mimic performance, going to the same spot, thrusting the dropping below the surface, opening its bill. A second surprise! The bird flew to a swifter part of the stream, plunged its whole head under water and shook it vigorously for a thorough face washing . . . How's that for sanitation!

Grand prize winners at Commission offices: Alice Racer, Judy Acree, Mary Lanie Gunter, Byran Rockwell, James Littrell, Jane Nessenthaler, Robert Lipscomb (rear), Scott Wallinger, Agnes Jardan and Rusty Gibbs (front).

Scott Wallinger, this year's scholarship award winner, is congratulated by Commission Executive Director I. T. Quinn.

Highlights of the Award
of the Eighth An

Each year since 1947 the Virginia Commissi
Division of the Izaak Walton League of Ameri
Contest.

Literally thousands of Virginia youngsters ha
importance of the state's wildlife and related r

In this, the eighth contest, an estimated 10,00
prepared essays for the contest and a majority
first time a $400 college scholarship was award
judged best for that grade in the state. Fifty-six
these, beautifully engraved certificates of mer
part of the state.

The top grade winners, one for each of the gr
ceremonies at the State Capitol in Richmond wit
the Senate Chamber.

Dr. D. J. Haward, Superintendent of Public Instruction in Virginia, was one of the principal speakers at the luncheon given for the honored guests.

The school participation prize was won by LaCrasse High School. Byron Rockwell, contest sponsor at LaCrosse, receives award from Governor Stanley.

Presentation ceremonies get underway in the Senate Chamber of the State Capital building in Richmond.

esentation Ceremonies
l Wildlife Essay

Game and Inland Fisheries and the Virginia
ave co-sponsored the Annual Wildlife Essay

een stimulated to think about and realize the
rces.

ool children from grades five through twelve
ese were officially entered. This year for the
o the high school senior whose essay was
cash awards were given and in addition to
re awarded to 240 other students from every

5-12, received a cash award of $50 each in
overnor Stanley making the presentations in

(Commission Photos by Kesteloo)

Mary Lanie Gunter, eighth grade grand prize winner, receives her $50 check from Governor Stanley.

Rusty Gibbs, grand prize winner of the fifth grade from Oak Grove School, is congratulated by Governor Stanley.

C. I. Van Cleve, President of the Virginia Division, Izaak Waltan League of America, addresses luncheon guests.

Camping, for old and young alike, offers an opportunity to learn more about nature. A night spent under the stars is an interesting experience.

Camping Opportunities in Virginia

WEST OF THE BLUE RIDGE

By MAX CARPENTER
Special Services Officer

NO one can explain the restlessness that stirs man every summer and prompts him to dig out road maps and to check up on his fishing and camping gear. Nor does anyone know the real reason for his wanting to "get away from it all" — the familiar sights and sounds and routine habits of everyday living. But it is good that he goes out and finds an uplift in being among strangers, seeing new places, doing new things.

For many this rejuvenation is brought about only by getting close to nature and roughing it in some mountain valley where few ever go. For only in such a place can one experience the indescribable thrill of hearing a drumming grouse, of seeing odd specimens of nature like salamanders or common dace vanishing before his eyes. There the glimpse of a white-tail deer or a gray fox may give you something to talk about for days. It's a strange feeling a mountain gives one, especially at night when secure in sleeping bags, you can listen and try to identify the varied hoots and squeaks outside the tent. However, after a few days you're glad to get back to a soft bed, warm shower and old friends whom we think must detect some transformation in us.

If you have the desire, nerve, and stamina for a camping trip, Virginia offers all types of facilities from the "walk in several miles" to the "drive up to the front door" camps. Unlike some of the western national parks, where crowded conditions are the rule, in Virginia many of the park areas are deserted through the week — if you want to get off the beaten path.

AREAS

West of the Blue Ridge Mountains are four large areas where it is possible to spend from a few days up to thirty at little or no expense for pitching a tent or parking a trailer. They are the Shenandoah National Park in the north, the Blue Ridge Parkway and two national forests — the George Washington north of the James River and the Jefferson National Forest south of the James. Four state parks are also situated nearby. All that is asked of the camper is that he help preserve the plant and animal life and leave a clean campsite.

GEORGE WASHINGTON NATIONAL FOREST

Only one area on this forest charges an admission fee. That is the Sherando Lake Recreation Area located 14 miles south of Waynesboro, Virginia. It is reached by turning south from U. S. Route 250 at Waynesboro on State Secondary Route 664 through the town of Sherando, or by turning east on U. S. 11 at Greenville, south of Staunton, and proceeding through Stuarts Draft southeasterly to the town of Sherando and from there south on Route 664 to the marked entrance road to the lake.

Visited by 50,000 people a year, the twenty-two-acre Sherando Lake provides swimming, boating and fishing. There are open play fields and numerous trails for hiking and nature study, including one trail that climbs a steep mountain to the Bald Mountain fire tower. There is a nominal service charge for use of the facilities of 25 cents per day for adults; 10 cents for children from 6 to 12; plus boat charges. For children under 6 there is

Food and drink prepared in the open always seem more flavorful. Fresh air and sunshine are a stimulus to tired taste buds and sharpen the appetite.

no charge. A small store sells soft drinks, ice cream and candy, and other stores are near by.

Four other camp areas, semi-developed and free, are easily reached from good highways:

1. *Elizabeth Furnace,* along Passage Creek in Fort Valley, on State Route 678 south of Waterlick, has parking space, water, and a tent camping area. There is no planned trailer area, but trailer parking is permitted where space is available.
2. *New Market Gap,* on top of Massanutten Mountain (Route 211) between Luray and New Market, offers water and two tent camp sites.
3. *Hone Quarry,* in Hone Quarry Valley off State Route 257, approximately 3 miles west of Briery Branch, has water and a tent area.
4. *Shenandoah Mountain,* 2 miles south of Reddish Knob lookout tower on Shenandoah Mountain Drive, where water is available from a nearby spring and camping is permitted.

Camping is also allowed at any suitable location one might select on the forest. The only restriction is a permit required for fires built anywhere except in grates provided at developed areas. The Virginia Burning Law prohibits open fires within 300 feet of woodland from March 1 to May 15, except from 4 p. m. to midnight.

In addition, five shelters are maintained in the George Washington Forest for use by hunters during open season. Information as to their exact location or to other types of camping may be obtained by writing to the Forest Supervisor, at Harrisonburg, Virginia.

JEFFERSON NATIONAL FOREST

Two areas on this forest are fully developed with a small service fee at each — Cave Mountain Recreation Area, 8 miles southeast of Natural Bridge, reached by traveling through historic Arnolds Valley, and High Knob Recreation Area, 6 miles south of Norton. These two attractive areas are open to the public from Memorial Day through Labor Day. A charge of 25 cents a day for adults and 10 cents for children, 6-12 years is made.

Four other areas where camping is permitted are:

1. *Middle Creek Picnicking Area,* 4 miles from Arcadia. A developed spring furnishes water.
2. *Snow Creek Picnicking Area,* between Glasgow and Big Island on the James River.
3. *Comer's Rock Picnicking Area,* 17 miles south of Wytheville by U. S. 21 and 3 miles by Forest Service Truck Trail.
4. *Big Bend Picnicking Area,* 15 miles north of Wytheville by U. S. 21 and 3 miles by Forest Service truck trail. The water supply at this area is *not approved.*

The regulation on fire permits is the same as for the George Washington National Forest. Five or six hunters' camps are also provided on this forest as a convenience to those who wish to camp there several days to hunt. More detailed information about the Jefferson can be obtained by writing the Forest Supervisor, Jefferson National Forest, Roanoke, Virginia.

SHENANDOAH NATIONAL PARK

In general there are three types of camping.

1. Camping in two established camp sites:
   A. *Big Meadows,* provides year-'round camping (with temporary toilet facilities in winter.)
   B. *Lewis Mountain,* (like Big Meadows) includes sites for both tent and trailer camping, outdoor fireplaces, fountains, tables and benches, and comfort stations.
2. Camping in 3-sided open shelters (permitted year 'round).
3. Camping (other than in fire season) away from established camp sites under permit from the Park Ranger. However, no fire permit is required if gas stoves are used.

(*Continued on page 24*)

"Trout so BIG they'll scare you"

By J. J. SHOMON

IT was a hot July morning when we arrived in the hidden forest nook high in the Alleghenies and parked in the shadows of the scented hemlocks. We'd been traveling for an hour since breakfast back at Hot Springs - Doc, Gil, Sedg, and I - and here at last was the creek with the fabulous trout known only to Sedg and the mountains.

"Nobody thinks there's fish here," said our ranger friend with a raspy chuckle in his voice, "but man, oh man, there's trout in this country that'll scare you."

Gil, generally reticent from long years of experience at trouting in Virginia's western mountains, said not a word. Doc piled out of the car with the freshness of a school boy and piped: "Just show us some of these trout, Sedg, and I'll be happy - even if I can't hook a six-incher."

The ranger's rough face cracked wide and a gurgling, rolling laugh filled the trees around us. It was the same old familiar laugh I had known years back, days when we were at the New York State Ranger School together, studying forestry, and Sedgwick was the idol woodsman from Troy, a trapper and a hunter and fisherman of such extraordinary ability that he left us all astounded. Now fifteen years of additional hunting and fishing and woods experience had matured him even more. And here he was with us, giving out the very best of his trout knowledge, guiding us to the big ones.

As an employee of the U. S. Forest Service on the Warm Springs Ranger District, Sedg carried a fishing reputation the like of which has seldom been seen or heard of in the mountains.

"Now, boys," he began modestly, "I know these trout. I know them pretty well. Take it slow. While I'm not saying you'll catch them, I know they're here. I've seen them.

We've got to cross a strip of posted land first, and I have the permission, then we're on government land again, and MAN . . . . look out for those trout."

It didn't take long to get us into trout gear. Sedg was ready first, a steel telescopic rod in one hand, a reeking fish bag in the other and a fat cigar in his mouth. "Wife wanted to wash this thing a couple of times," he laughed, tapping the smelly sack, "but I reneged. Might spoil my luck. I've had my share of trout in it this season already."

With Sedg in the lead, we raced off down a narrow forest trail close to the sound of a gurgling brook nearby. He warned us of rattlers and copperheads, but said not to worry as he would kick them out of the way.

"I never pay much attention to them," he called back. "Sometimes I wish we had even more of them. Sort of keeps the crowds out."

After about 300 yards the trail simply disappeared among some undergrowth and Sedg plowed right through all the stuff like a steer. In about 10 yards he stopped. "This is it," he said. "See that red government paint over there on the trees? That's U. S. Forest Service property. The line comes through here, leaving all this wonderful country south of us open to fishing. Yes, sir, open water all the way down to the Cowpasture River and beyond. But so far as anyone knows, no trout are supposed to be in here. What a joke!"

Carefully he parted several mountain maple bushes and exposed the light. "Come closer, you guys. Closer. Now there, see 'em? See 'em near the bottom?"

All three of us craned our necks but no one spoke. Then Gil whispered, "Yeah . . . sure, I see one . . . no, two. They're dandies!"

Then Doc and I saw them. Big, fat, motionless rainbows, over a foot long and resting like small subs in a bay. Sedg stepped back for a moment and looked at us. His cigar rolled a full turn in his mouth. "Who's first?" he said.

We moved back and fumbled our gear.

"These trout are a little wild, now," said Sedg. "Maybe we ought to go downstream first and locate other places and then start working back."

But the old sage of Bath County couldn't hold us back. Gil was first to try. At the first cast of his copper Colorado spinner the trout scattered in all directions. Several more went into a melee, flashed here and there, appeared again, and then settled out of sight in the shadows of the pool. Gil pursued them cautiously, but the fish weren't interested in his offerings.

"Man alive," cautioned Doc as I advanced more boldly to the pool to join Gil, "you all had better keep back out of sight. These trout are scary. Holy catfish! There! Look! Look at *that* big one!"

Doc fairly trembled with excitement. He had reason to. For, sure enough, farther up the pool, motionless as a huge rock, stood a rainbow big as your arm. He was black and thick and hugged the bottom in hardly 18 inches of swift water, utterly unconcerned. Why he had not moved while the rest of his small cousins scattered was a mystery.

Sedg took one look and quipped, "Brook's full of them that big - and bigger." But his voice broke a little as he said it and he came in for a closer look.

The next 30 minutes produced absolutely nothing, not even under the duress of Sedg's salmon egg, so the four of us, slowly and reluctantly left the big trout for a later hour.

To say that we were a mite disappointed in not getting a whirl out of that big rainbow is putting it mildly. But Sedg was not discouraged. "Shucks, man, we'll get trout," he said. "All we've got to do is first locate a few of them and get down to business."

But things didn't look right: low clear water, hot weather, the midsummer season, and the high noon-hour yet to come.

"These trout aren't feeding," said Gil, joining me at another pool. "We'd have a picnic with flies if they were hitting. Guess I'll stick to my spinner."

Sedg soon bypassed us and took a long lead down the stream. The rest of us scattered behind him, fishing the better-looking holes as we found them. Several small rainbows hit at my weighted-down black-gnat fly, but no big trout were showing up. Finally I picked up a nine-inch brookie from under a boulder and my interest in trout fishing returned in earnest.

An hour later, after we had scattered several times over a mile of nice water and got together again, Sedg's voice cut through the hemlocks.

"Down here!" he yelled with a motion of his arm.

Something was up all right. Eagerly the three of us raced down the creek to join him. "There's a nice batch of 'em here," called Sedg, as we neared what looked like a beaver dammed-up section of the stream.

"They're just thick in this hole," he said, pointing. "You can get your limit in this one spot alone if you fish it right. Just take it easy."

(*Continued on page 23*)

Whitetails at North River

By E. V. RICHARDS
District Game Biologist

THE North River Game Refuge in western Augusta County is one of the few remaining areas in the Old Dominion set aside as a refuge for wildlife. Riding through the area, one can see stands of majestic white pine skillfully managed by the United States Forest Service. He may be lucky enough to spy a wild turkey flock or, late in the evening, to see deer or ruffed grouse. Often a black bear will lumber across the road. A valuable asset to the recent establishment of deer in this area, the North River Game Refuge affords protection and acts as a reservoir for breeding stock for all forest game animals.

Easily accessible over good roads, the game refuge is located in a picturesque area of the George Washington National Forest. Situated in the rugged Shenandoah Mountains, 25 miles west of Staunton, Virginia, this unique area for wildlife covers 7,283 acres. Elevations range from 2,000 to over 4,000 feet. The highest points are Hanky Mountain and Bald Knob.

North River has an interesting history. Records reveal that about 1900, the Chesapeake and Western Railroad extended its line from Elkton to North River Gap. At the end of the railroad the present town of Stokesville was established. This was the first and only large settlement in the area for the exploitation of timber. Here a circular sawmill, a stave mill and tanbark yard, using chestnut and oak bark, was set up.

A narrow gauge railroad was built up North River Gap on what is now known as the "Old Tram Road." A thriving community sprang up in North River, dependent upon timber and chestnut oak bark. Scores of families lived in and about the area now known as the refuge. Several graveyards still exist today with tall pines standing between the headstones. The old fields in this area, such as Shifflet Fields, once grew corn and grazed cattle. Now these fields have been planted to pine trees and are producing pulpwood and timber under the management of the United States Forest Service.

By 1910, free-running dogs and year 'round hunting had reduced the native whitetailed herd in the North River region to such low numbers that deer were practically non-existent. Old timers state that the last native whitetail was killed in the Meadow Ground along the Lebanon Road. By the mid-twenties, the deer were gone from most of the mountainous sections west of the Blue Ridge.

The idea of setting up a wildlife refuge in western Augusta County cannot be attributed to any one man. Many sportsmen—members of the old Game and Fish Protective Associations of Staunton and Harrisonburg—worked long and hard with the Virginia Commission of Game and Inland Fisheries and the U. S. Forest Service officials for the establishment of the North River Game Refuge.

In October 1928, an agreement between the Commission and the U. S. Forest Service established the North River Refuge on lands of the George Washington National Forest. The original size of the refuge was 2,300 acres. The purpose of the refuge was to afford a sanctuary for game and a place to restock deer where they could be completely protected. Another feature of the refuge was the protection it would give the city of Staunton watershed. The Game Commission agreed to post with signs and wire the closed area of the refuge. Also, the area was to be patrolled by a game manager.

In March 1928, Clarence E. (Cam) Huffer, of Mt. Solon, was hired as caretaker of the North River Refuge. "Cam," as he is known to his many, many friends, is a true mountain man. Having lived and worked in the mountains all his life, he is an expert woodsman and one of those rare individuals who knows the ways of wildlife from practical experience gained in the field. To Huffer goes much of the credit for the success of the re-establishment of deer in the North River region.

In the early days of the refuge, the refuge manager was concerned primarily with the protection of the deer herd that was being established. Painting boundary posting signs, repairing the refuge wire and patrolling the area became the main duties. Predators in the area also were controlled to protect the deer.

The first stocking records available show that early in 1930 two adult doe deer were released in the North River Refuge. These deer purchased with contributions

This whitetail doe deer is key to herd management. When deer herds outstrip the food supply, doe deer must be harvested. There are about 125,000 deer in Virginia at the present time.

from Staunton and Rockingham County sportsmen, were bought from Minnesota for $40. each. Express charges amounted to another $40. Other deer may have been released earlier in 1930.

In 1932-33 additional deer were released. Most of this stocking was done by the Commission of Game and Inland Fisheries.

A 12-foot high corral was made in the middle of the refuge to hold the deer being restocked. Here the deer were fed hay and corn for two weeks while they recovered strength from their long trip to North River via truck and train.

During the early 1930s the North River deer herd increased in numbers rapidly. Soon the need for a larger refuge became apparent. As the deer began to repopulate the surrounding national forest land, game workers of the Commission and the United States Forest Service recommended the game refuge be enlarged. This was necessary to provide additional protection for the North River herd. In April 1934, an agreement was signed authorizing the enlargement of the North River Game Refuge to include the area from Hard Scrabble Knob to Staunton Dam — covering an area of approximately 10,000 acres.

Additional deer were stocked in January 1936. These 24 deer, obtained from Westover, Pennsylvania, were released within the wire, making a total of 109 deer released in or near the refuge.

With more effective dog laws, increased law enforcement and ideal habitat, the North River deer herd grew in number and soon moved out into the national forest lands adjacent to the refuge.

Additional stocking of deer was done by the Game Commission on other areas on the forest and deer soon became generally common over most of the mountainous areas of the George Washington National Forest. Beginning with the 1945 season, hunting was permitted for the first time in most areas of the National Forest. While no hunting was permitted within the game refuge, hunters did harvest surplus buck deer on forest lands surrounding the refuge.

A view of the forested mountain terrain typical of the North River Game Refuge.

As hunting pressure increased on forest land adjacent to the Game Refuge, the need for such a large closed area was questioned. In 1948 state and federal wildlife workers recommended reduction in the size of the North River Refuge from 10,000 acres to the present 7,382 acres. That again placed the land above Camp Todd, west to Hard Scrabble Knob, open to hunting.

Another phase in the management of deer in North River began in the spring of 1949. At that time the Virginia Bowhunters Association and local archery enthusiasts contacted the United States Forest Service and state game workers requesting that some special area be set up on national forest land for bowhunting.

In October 1949, the Commission and the United States Forest Service opened the western half of Northern River Refuge to deer hunting with bow and arrow. Each fall this area of 3,500 acres is used by several hundred archers. Many come from Staunton and surrounding country. Others drive from Tidewater Virginia and neighboring states. A few deer are taken by bowmen in North River each year. In past hunting seasons, one or two hunters were successful in bringing down deer. Plenty of hunters reported shots at deer and needless to say all had a lot of fun in hunting this special area.

Restocking of depleted deer range in Virginia has continued in recent years. To obtain a supply of deer for restocking other areas in the Old Dominion where deer are now absent or very scarce, a program of live-trapping deer was started in the North River Refuge in the fall of 1953.

Deer are live-trapped in long wooden box-like traps, approximately three feet by four by twelve. The animals are enticed into a trap by various baits such as apples, corn, hay, salt and even mistletoe.

An expert deer trapper was employed in 1953 and forty animals were taken in live traps. All these deer were later released on national forest land in Amherst County where a deer herd is being started.

Plans are being made to live-trap another group of deer from the refuge for restocking purposes in 1955.

On the North River Game Refuge, the overall management of deer has been the joint responsibility of the United States Forest Service which owns the land and the Virginia Commission of Game and Inland Fisheries which has jurisdiction over the wildlife. Only through such close cooperation is it possible to manage wildlife on this unique area of national forest land so that Virginia sportsmen will have the best possible hunting at all times.

"Like winds and sunsets, wild things were taken for granted until progress began to do away with them. Now we face the question whether a still higher 'standard of living' is worth its cost in things natural, wild, and free. For us of the minority, the opportunity to see geese is more important than television, and the chance to find a pasque-flower is a right as inalienable as free speech." —*Aldo Leopold in A SAND COUNTY ALMANAC*

Commission Photo by Kesteloo

The Gray Squirrel in Virginia

By W. C. KELLNER
Associate Editor, Virginia Wildlife

THE GRAY SQUIRREL is one of Virginia's most abundant game animals. There are two known sub-species in the state. The gray species is better known than its several other Virginia relatives, the fox squirrel, the red squirrel, and the flying squirrel. Be cause it can, and will, live close to man, almost every Virginian, young or old, whether from the city or the farm, has seen a live gray squirrel.

Many gunners are introduced to the sport of hunting by stalking old *bushy tail*. Its popularity is not restricted to the nimrods, however; children and their parents as well enjoy feeding and watching the semi-tame squirrels of the city parks.

The suburbanite occasionally complains of squirrels digging up the lawn or a favorite flower bed, but most people would suffer this inconvenience just to have the frisky animals around their homes.

DISTRIBUTION

The gray squirrel is found in every county in Virginia. It has the ability to adapt to changing conditions and has withstood the pressure of civilization about as well as any of our game animals including the cottontail rabbit. The range of Virginia's other squirrels, the fox squirrel, red squirrel, and flying squirrel, is much more restricted.

LIFE HISTORY

A few squirrels may be found with young almost every month of the year. In Virginia, however, there are two peaks in the production cycle. A spring litter is born in mid-February and leaves the nest by the first of April. The fall litter is born in early August and usually leaves the nest by the first of October. The gestation period is 44 days and two litters a year is normal. Two to three young is average for each litter.

At birth a young squirrel is naked, blind, and helpless and requires almost constant attention from the mother.

HABITAT

Normally in the wild the gray squirrel will be found in wooded areas of mixed hardwoods. It is at home wherever various oaks, hickories or other nut trees occur. At times it is found in pine country and eats the seed of the pine. Elevation is not a barrier as it is found from the highest mountain top to the coastal plain.

Squirrels make their homes in hollow den trees and many, especially in summer, construct leaf nests in the fork of a likely tree or even in the swaying outer branches. These nests are well constructed and are adequate protection from rain and storm.

FOOD

The gray squirrel is principally a nut and plant eater but on occasions will eat insects and insect larvae. It has been known to take bird eggs and young birds from the nest. The principal foods, however, are the buds of plants and the various fruits and nuts produced by trees and woody plants. Such staple foods as acorns, hickory nuts and dogwood berries make up the bulk of squirrel food when they are to be had. A bountiful mast crop is a boon to squirrels and many other forms of wildlife.

The ventral view of a lactating female. This squirrel probably had young in the nest.

The erection of squirrel denning boxes furnishes a home for young (see insert lower right).

MANAGEMENT

Recent studies in Virginia and neighboring states point to the fact that it is biologically unsound to have the squirrel season open prior to October 1. Up until this time a majority of the fall broods are still suckling and are entirely dependent on the mother for survival. During any September hunting season many females with young in the nest are bagged by the squirrel hunter, and thus the young in the nest perish when the mother is killed. R. H. Cross, of the Virginia Commission of Game and Inland Fisheries, examined 103 squirrels killed by hunters during an early September hunting season and found 38 per cent of that number to be adult females. Exactly 100 per cent of these females were suckling young. By changing the hunting season to open later in many counties of the state we are now saving hundreds of fall broods and assuring ourselves of many more animals to hunt.

For the hunter, of course, the best time to squirrel hunt is early September when the animals are cutting the fall crop of hickory nuts or acorns. They begin to eat these nuts and acorns while they are still green. The leaves on the tree branches furnish a perfect screen for stalking a feeding squirrel. It is a known fact that squirrels are easier to hunt at this particular time of the year. *However, it is not good conservation or very sporting to leave a family of young in the nest to perish by taking the mother squirrel at this time.*

This well developed embryo was recovered from a gray squirrel killed in a county still having an early September hunting season.

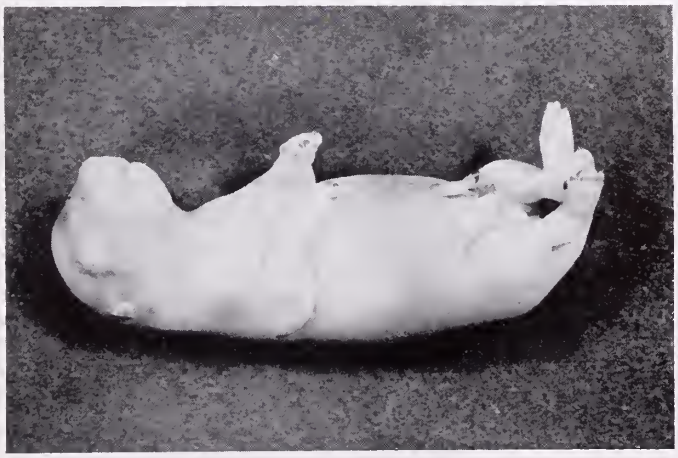


Photo by C. H. Peery

Good forest management and such game management practices as the protection of den trees, regulated seasons, and bag limits are practical management tools that can be used on a large scale, statewide, basis. Artificial dens and nest boxes erected in small woodlots in suburban areas in conjunction with winter feeding is beneficial to squirrels and should be encouraged, if for nothing more than to have the squirrels around for their aesthetic value.

The gray squirrel is one of the state's most popular small game animals. Despite the mounting hunting pressure and natural adversities there are enough squirrels each season to furnish many Virginia hunters with splendid sport and more often than not a table delicacy that is impossible to duplicate.

With the proper cooperation game managers can produce a harvestable surplus of gray squirrels each hunting season and still have sufficient brood stock to keep the squirrel population at a level that will be harmonious with the activities of man.

TROUT SO BIG (*Continued from page 19*)

With characteristic caution, I eased my way to the edge of the pool, holding my breath. Sure as Sedg's word, there they were! A full dozen beautiful rainbows! I measured them instantly with a fisherman's eyes. A pound apiece surely. Quickly I reached into my fly box and selected the best-looking floater I could find - a large yellow bivisible. Fingers trembling, I somehow made the fly fast to the leader and by a sidewise motion I managed a short cast.

Not a trout moved as the fly settled on the clear water. A second and third cast yielded nothing more than a movement of a fin or two. Then I made a sharp try near some pine laps and instantly one of the smaller trout struck. He was a fair rainbow and I had difficulty landing him without a net, but I finally edged him close to the bank and lifted him out of the water.

Gil and Doc joined me at the pool and began getting into position. The school of trout began to cruise around the pool slowly. Once in a while one or two would rush into the shelter of the pine laps. Sedg watched them with owlish eyes and suggested we stay tight and work on them while he went farther downstream to single out other holes and more trout.

After a half hour of desperation I gave up at the beaver pool. Those trout just weren't to be caught, and there were plenty of them. Doc said they must have been fifty in the lot. He and Gil remained on but I couldn't resist the urge to move on and find more willing trout. (*Continued on page 24*)

But the going was disappointing. Everywhere it was the same. Trout aplenty, but terribly wild and shy and completely disinterested. I tried everything in the fly book and then some. I tried drys and wets, streamers, rubber bugs, spiders, a flatfish, even an artificial minnow, a pan-sized brookie. I tried a live carrion beetle. I floated lures, sank them, jerked them, let them lay. But the trout weren't taking and they weren't giving any signs of when they would change their minds.

After three hours of hard work and traveling downstream still another mile, meeting Sedg and going back with him to the beaver pool, I moved back upstream toward the car and lunch. At the beaver pool, the boys were still at it, but the story was still the same - no fish in any creel but plenty of good ones in sight. So I left the hopefuls at the beaver pool and wished them luck.

Working upstream I made another stab at each pool but found no trout would cooperate. I made a final try at the first big pool and that cinched it. I gave up and went to the car. This was not my day.

Anxious to know what the fish were eating, I decided to clean my two small trout, and examine their stomachs. To my amazement, both were empty! The trout weren't feeding and this proved it. I was glad I quit.

After taking the edge off my appetite with a light lunch, I dozed off to a nap in the car. Finally, an hour later, through a half stupor and slumber, I heard voices. It was Sedg and Gil.

"Man, oh man!" exclaimed Gil, puffing. "I've seen it now! I've seen everything. I'll tell the world I've learned something about trout fishing."

Sedg heaved a deep laugh as he slid off his fish bag seemingly heavy with fish. Then, one by one, he began to withdraw large rainbows, sliding them gently to the ground. Eight big beauties - all fourteen inches and over and one, a two-pounder. A creel limit!

Well, I couldn't trust my eyes. I stared at those fish as if I'd never seen trout before. It was unbelievable.

"Yes," said Gil, "they're the trout that couldn't be caught. Seven of them out of that one hole at the beaver pond, and that *big* one, from the first pool."

Sedg didn't say much. He just laughed a little in his throat. "Lots more left," he said. "The Doc's got four and is still there. I showed him a pointer or two, and he's doing all right. They're not feeding though. Not these trout. You've got to get next to 'em somehow and *make 'em strike.*"

"You said a mouthful there," said Gil. "After I caught my three and couldn't get more, and then watched you snag these beauties - well, I just had to get up. I thought I knew something about trout fishing. But brother, after this demonstration, I know nothing. *Absolutely nothing.*"

That evening, as we rolled out of the rugged Alleghenies with a batch of beautiful trout in the ice chest - mostly Sedg's - all we talked about was the extraordinary skill of that remarkable forester from Hot Springs.

"Told you fellows," I said, "that this man Sedg is without question the best trout man in Virginia. You believe it now, don't you? But tell me . . . *What in the world was he doing that we weren't doing? What was his secret?*"

"Secret," laughed Doc, "shucks, . . . there was no secret. He just worried the daylights of those fish until they got so mad they struck to keep from going crazy. Now the big one . . . " and his voice held back. "Shall we tell him about the big one, Gil?"

"Oh, go on tell him," said Gil. "Even if we did promise to keep it from you."

Well, Doc held back a moment, then spoke. "It was this way. When you left us down at the pool and started back upstream, we knew and Sedg knew that you were after that big trout. So Sedg promptly followed you upstream. He waited until you had annoyed that big trout good and proper and when you left, he went to work. The fish was so mad by then that with a little more teasing it would have struck your boot, and Sedg knew this. He baited up natural. He threw that trout a nice, big, juicy blueberry and he gobbled it up. And that, my friend, is how it was."

CAMPING (*Continued from page 17*)

All these facilities are provided free of charge on a first come, first served, basis. No reservations can be made and campers must register on arrival and check out on departure. Firewood is not always available in the Park. Camping is limited to 30 days during the heavy travel season from May 15 to Labor Day.

THE APPALACHIAN TRAIL

Although the trail extends beyond the Shenandoah National Park, the following trail facilities are available:

1. *Three-sided open shelters.* Seventeen such shelters are located 6 to 10 miles apart along the Appalachian Trail. These have built-in bunks for 6, tables, spring water, garbage pits, and toilets. There is no charge for their use and first come are first served.
2. *Closed cabins.* Four locked cabins along the Appalachian Trail accommodate 12 persons (8 at Range View) and are fully equipped, except for food. Reservations must be made with the Potomac Appalachian Trail Club, 1916 Sunderland Place, N. W., Washington 6, D. C.

BLUE RIDGE PARKWAY

Camping is limited on the Parkway. At Rocky Knob, in Virginia, and Doughton Park, in North Carolina, are trailer and campground areas. Here are found tent platforms, fireplaces, trash cans, drinking water and comfort stations. Length of stay is limited to 30 days.

STATE PARKS

The four state parks west of the Blue Ridge are Claytor Lake, near Bedford; Douthat, near Clifton Forge; Fairy Stone, near Bassett; and Hungry Mother, near Marion. All four have accommodations for camping.

Our National Bird Needs Protection

This year, 1955, is the Golden Anniversary of the National Audubon Society which was founded in 1905 to conserve America's natural resources.

Since its beginning, the Society has carried on vigorous campaigns to protect threatened species of wildlife. This year NAS is conducting a nationwide inventory of bald eagles in the hope of securing data which will be a valuable guide to future action.

Though our national bird emblem, the bald eagle, is not actually in danger of extinction, its population has been decimated by illegal shooting and alteration of its habitat. For example, Charles L. Broley found that in four Florida counties in which he had banded bald eagles for many years, only 10 nests raised young this year in comparison to 74 nests that raised young in 1945. Unless effective action can be taken to stem the decrease of our national bird, we may be faced before long with the ironic prospect of being represented heraldically by an extinct species, warns the National Audubon Society.

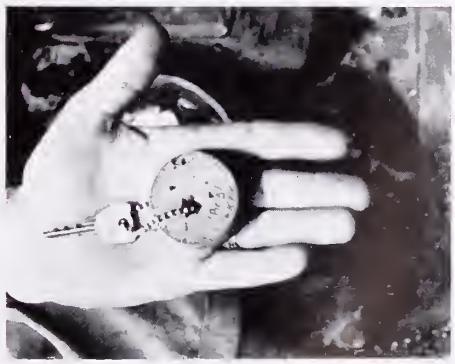
Ducks Unlimited Foundation Formed

Another milestone in the history of Ducks Unlimited was the formation this year of the Ducks Unlimited Foundation, Inc., with Will J. Reid, of Long Beach, California, chosen its first president and a director.

Other directors are W. Alton Jones, Robert Winthrop, E. Herrick Low, Henry L. O'Brien, Peter V. D. Voorhees, Arthur Bartley, all of New York, Harvey L. Sorenson, of San Francisco and Robert M. Gaylord, of Rockford, Illinois.

Established to insure the perpetuity of Ducks Unlimited operations, the objects of the Foundation are similar to those of the parent organization and will enable it to set up a permanent fund for emergencies. Such a fund will ensure continuance of the DU restoration program and the future of migratory waterfowl in the United States and Canada.

The foundation will not affect the present program of Ducks Unlimited, but will build up reserves for the future.



A closeup view of the boat key attached to a large cork.

Pure Ingenuity - "It Floats"

Commission Photographer Leon Kesteloo reports on an ingenious solution to the problem of the boat key that goes overboard.

Richmond bandleader Ray Raymond put an end to his own worries by attaching his boat key to a cork. If he takes a spill into the water, all he has to do is look around for the floating key.

Nash Award Winners for 1955 Announced

Names of 10 professional and 10 volunteer conservationists to receive awards in the second annual Nash conservation awards program were announced by outdoors writer Ed Zern at the North American Wildlife Conference in Montreal.

Each winner will receive a bronze plaque and professional conservation workers will each receive a $500 award.

Winners in the professional class are Robert P. Allen, Florida wildlife biologist with the National Audubon Society; Dr. George William Bennett, head of the aquatic biology section of the Illinois Natural History Survey; Charles Wirth Bosch, Jr., executive secretary of the Louisiana Wildlife Federation; Dr. E. L. Cheatham, chief of the Bureau of Game Management of the New York State Conservation Department; John S. Gottschalk, U. S. Fish and Wildlife Service Administrator in Washington; Willard R. Hone, assistant regional forester of the U. S. Forest Service in Georgia; Charles O. Handley, Sr., chief of the Game Management Division of the West Virginia Conservation Commission; Alexander J. Jaenicke, U. S. Forest Service in Oregon; William Thomas Ward, game warden with the British Columbia Game Commission; and Donald K. Wolff, of the Soil Conservation Service, in New Jersey.

Albert M. Day Retires From Fish and Wildlife Service

Albert M. Day, assistant to the director of the United States Fish and Wildlife Service retired on June 30, after 36 years of federal service, to join the Arctic Institute of North America. In his new position he will direct a fact-finding study of migratory waterfowl.

Day was first employed by the former Bureau of Biological Survey in 1919 as a temporary field assistant in Wyoming. Since then he has been continuously connected with the Bureau and its successor agency, the Fish and Wildlife Service, except for a year's leave for graduate studies.

Richmond Rabies Clinic Give 9,084 Shots

Julian Hill, game warden for the city of Richmond, says that rabies shots were given to 9,084 of the city's dogs brought to the 11 clinics conducted in various parts of Richmond between May 9 and 19.

Julian Hill, Richmand City's game warden, issues vaccination certificates far pets receiving rabies shots.

The clinics were held for four hours a day and everything went pretty smoothly, except that a few people were bitten—none seriously—by over-excited dogs and, of course, there were children's tears of sympathy for their pets.

When a Fellow Needs a Game Warden

Stuart A. Blackwell, game warden of Northumberland County, reports an unusual incident from his county:

"A motorist passing through Wicomico Church, a small village in Northumberland County on Saturday afternoon, lost a hub cap which rolled in Mrs. Elliott Tignor's yard. Immediately a raccoon which no one had previously seen, came over and sat on the hub cap. The motorist who stopped, went back to get his hub cap, but the 'coon bowed his back, bristled up and defied him."

The motorist went into Llewellyn Beatley's store and Beatley telephoned Game Warden Blackwell. By the time Blackwell arrived, quite a crowd had gathered and the 'coon was still holding his ground. The warden walked over cautiously with his "animal catcher" and took up the 'coon, put him in his car, bought a can of sardines and carried him into the woods. When last seen, the unperturbed 'coon was enjoying his sardines.

A few days earlier Fred Hall, who lives a few miles from Wicomico Church, found a 'coon on his front porch when he went out in the morning. "Raccoons in the lower Northern Neck," surmises Blackwell, "must be getting tame or are looking for food."

Nelson County Groups Sponsor Corn, Pasture and Wildlife Food Patch Contests

The game and fish committee of the Nelson County Men's Club joined Soil Conservation Service technicians in sponsoring a wildlife food patch contest in the county while the agricultural committee of the club cooperated with the agronomy committee of the Board of Agriculture to promote a corn and pasture contest.

All committees felt that much good could be accomplished by creating a simultaneous interest in all three projects. Keen interest has been taken in the planting of wildlife food patches during the last two years since they are undoubtedly needed and used by birds and other wild animals. Good pastures have increased and the corn yield in the county has almost doubled since the contests began.

The awards in all three categories will be made on November 9th.

Improved Facilities at Philpott Beach Attract More Visitors

During the first four months of 1955, there was an estimated total of 120,000 visitors to Philpott Lake and Beach, in Henry and Franklin Counties. Improved facilities will this year probably draw an even larger crowd than the 414,000 of last year.

The road from Route 788 to the beach is being improved and motorists will find much smoother going than last summer. Crushed stone was dumped on the road after it had been leveled in a grading operation and a seal coat is to be applied.

A camping site near the beach and a picnic shelter will be available without charge to visitors. Much work has been done on the smooth sandy beach and grass has been planted farther back from shore.

Reservoir Manager Clarence Burrage expects this year's total to surpass the previous one and he believes the development of the area as a recreation center is only just beginning.

Photo by F. Patton

Kit Shaffer, Game Bialogist, assisting in gulley control program.

Pulpwood Festival Field Day in Amherst

Game Biologist Kit Shaffer took part in the Virginia Pulpwood Festival Day in Amherst County and demonstrated how to heal a gully to encourage lespedeza growth. After straw was put down, pine trees were planted on the gully.

The field day was one of many activities being carried on during the three-year "Plant More Trees" program which has 75 million trees as its objective by 1957.

Wildlife Questions and Answers

Ques.: Have cats ever been used to retrieve game as dogs are trained to do?

Ans.: Yes, an article by E. Laurence Palmer in "Nature Magazine" states: "One of the earliest representations of cats shows one that evidently was used to capture or retrieve game birds and ducks . . . I once knew a sportsman in central New York who had a cat that would retrieve game that he shot."

Ques.: During a recent camping trip, I saw a long thin dark gray snake, with faint bands, cross a sandy road and climb a tree. It held its head rather high as it proceeded and looked as though it had just eaten a mouse or some other small animal. Have you any idea what kind of a snake it could be?

Ans.: It is always difficult to identify a snake positively without actually seeing it, but your description of its looks and habits suggests that it was probably an immature blue racer which had not yet picked up its permanent color pattern. This characteristic of juvenile snakes makes them particularly hard to recognize.

Ques.: Are all turtles as slow and passive as the fable says they are?

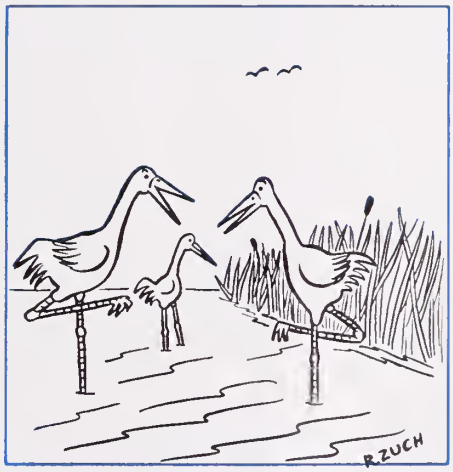
Ans.: If you had ever tried to run down a soft-shelled turtle on land or to catch up with it in the water, you would know that the proverbial slowness only applies to some turtles. As for being passive, an angry aggressive snapping turtle is a lively refutation of that supposition. Of course turtles as a group do not have the consistent speed and energy of many other animals.

Ques.: Do deer vary the color of their coats with the season?

Ans.: Yes, they have a short, reddish summer coat and a dark gray, heavy winter coat.

Ques.: How many poisonous snakes are there in Virginia and can you tell me how many fatalities from snake bite occur on an average each year?

Ans.: Three types of poisonous snakes occur in Virginia: the timber rattlesnake of the uplands, the copperhead which is more widely distributed and the cottonmouth moccasin which has been reported rarely in Back Bay, the Great Dismal Swamp and up the James as far as Hopewell. Though we do not have exact figures on deaths from snakebite in the state, they are known to be very rare, though a good many people are bitten by snakes and recover.



"Junior insists on standing on both of his feet."

Ques.: What would you recommend as lures for trout?

Ans.: Since trout are cannibalistic, live bait such as insects, larvae, worms and crayfish are preferred. However it is more exciting to outwit trout with artificial lures. Spinners, with or without flies or bucktails make good catches early in the spring. Streamers and imitation minnows are good in fast waters. Many trout fishermen enjoy using the "flatfish," especially for rainbows. For great sport, try wet or dry flies during late spring and summer.

Ques.: Is the fox squirrel the same as the red squirrel?

Ans.: No, the fox squirrel is much larger than the red squirrel and the color is much more variable, from gray, buff and rusty and blackish phases.

Ques.: I know that cheetahs are very fast animals, but not just what speed they can attain. Can you tell me?

Ans.: In two seconds a cheetah can reach a speed of 45 miles an hour, then reach 70 miles an hour for up to 500 yards.

Ques.: Please tell me in what counties Sunday fishing is illegal.

Ans.: Sunday fishing is prohibited in the counties of Alleghany, Bath, Bland, Botetourt (except in James River and Carvin's Cove), Craig, Giles (except in Mountain Lake and New River), Highland, Rockbridge, Surry (except in Sunken Meadow Lake), and in Silver Lake in Rockingham County. It is necessary to get written permission from the landowner to fish on Sunday in Augusta County.

Ques.: Do seals ever come as far south as the Virginia coast?

Ans.: Four specimens of the harbor seal have been taken in the lower James River, in James City and Warwick counties and in the Chesapeake Bay off the mouth of Back River, York County.

Ques.: I have heard it said that edible and poisonous mushrooms can be differentiated by the fact that the former can be peeled easily and the latter cannot. Is this a reliable test?

Ans.: No, this notion is utterly false, for the deadly **Amanita muscaria** peels as readily as the common meadow mushroom. But there are marked differences by which one can tell them apart. Amanitas have white spores, are rather tall, and possess, on their stems, both ring and volva. The meadow mushroom, **Psalliota campestris**, has purple-brown spores, is short and squatty, and possesses only a slight ring, and no volva.

KNOW YOUR VIRGINIA FISH

Get a copy of FRESHWATER FISHING AND FISHLIFE IN VIRGINIA

- 104 Pages, gives interesting facts about all of Virginia's freshwater fish and the Commission's efforts in management
- Beautiful color plates illustrate all of the principal species of sport fish of the state
- A list of the public fishing waters of the state is included
- There is a chapter on approved methods of preparing fish for the table

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It may be obtained from the office of the Commission, Box 1642, Richmond 13, Virginia. Remittance should be made in coin or by check, since stamps cannot be accepted. Make check payable to the Treasurer of Virginia.